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PROFESSOR J. D. FORBES
ON
THE DANGER
OF
SUPERFICIAL KNOWLEDGE.

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BY JAMES C. HARRIS

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THE DANGER
OF
SUPERFICIAL KNOWLEDGE:

An Introductory Lecture
TO THE
COURSE OF NATURAL PHILOSOPHY
IN THE
UNIVERSITY OF EDINBURGH,

DELIVERED ON THE 1ST & 2ND OF NOVEMBER, 1848.

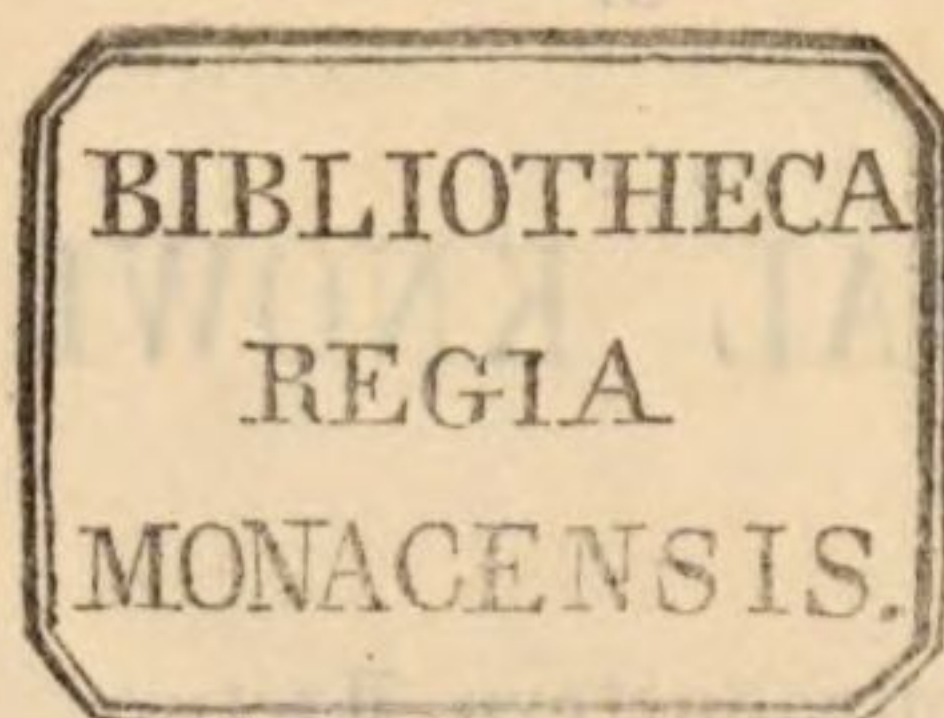
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PREFACE.

THIS Essay, though called a LECTURE, was delivered at two sittings, on account of the length to which it had extended. But as there is no natural division of the subject, I have printed it as it was written—in the form of a continued discourse.

As it was composed for a purpose exclusively academical, I shall offer no apology for the frequent citations which it contains from the well-known precepts of Bacon, and the practice of Newton. The student of science cannot be too early introduced to the study of the noble treatise *On the Advancement of Learning*, and the not less noble character, both as a philo-

sopher and as a man, of the author of the *Principia*.

With regard to the quotations from Bacon, I may remark, that although chiefly made from the English edition of the work just named, I believe that in no instance was there any alteration in the substance of the views they embody and the doctrines they support, in the later Latin version of the same work, which is considered by some to express Bacon's amended opinions on the subjects there introduced.

It will be seen that the composition of this Lecture was suggested by a speech, made about two years ago, by Mr. Babington Macaulay, at a public meeting in Edinburgh, which city he then represented in Parliament. In that speech, (addressed to a mixed audience of persons more or less interested in literature and education, but including several persons dignified both by their station and acquirements,) the ingenious author undertook to controvert and ridicule the opinion that superficial learning, as such, ever

produces injurious results; an opinion far too pleasing to a majority of mankind to allow of their sifting it very closely, even if it had not been skilfully maintained by rhetorical arguments, and levelled to all capacities by amusing illustrations.

I could have wished that it had fallen into other hands to refute the sophism contained (as I conceive) in Mr. Macaulay's speech; but as no such reply has appeared, excepting a short but vigorous protest in the leading article of *The Times* newspaper of the period, I have felt it to be a duty in some measure incumbent on me, in consequence of the academical position which I hold, to attempt the correction of an erroneous impression, and an injurious principle, thus temptingly presented to the minds of our youth. The evident premeditation of the address, (which Mr. Macaulay came to Scotland on purpose to deliver,) and the substantial correctness of the published report, are confirmed by the circumstance that no denial or retracta-

tion was made, to the best of my knowledge, after the criticism in *The Times*. I deem it unnecessary to apologize for bringing the subject under notice after a lapse of two years; for if wrong then, the argument cannot be right now. The intrinsic importance of the question, not the momentary impression made by the address, being the reason which induced me to handle it at all, I shall have no reason to regret, but the contrary, that some delay has occurred, for which, besides, sufficient reasons might be stated.

I have only to add, that whilst preparing this lecture for the press, I have had my convictions greatly strengthened as to the truth and extensive bearing of the principles which I have, I feel, but imperfectly advocated; and of the danger of the errors which I have undertaken to condemn. Considering the hold which the general subject of education now takes on the public mind, it is perhaps surprising that the injurious tendencies of superficial learning have not been more narrowly scrutinized, and their

counteractives pointed out. We hear, every day, loud but vague eulogies upon the advantages of scientific and literary acquisitions; and less loud but not less vague insinuations as to the questionable results of those attainments; but we rarely find an honest attempt made to unite what is true in the opinions of the advocates of rival systems of education. To take all that is good in learning, and reject its unfavourable tendencies, requires the calm effort of a dispassionate judgment. To distinguish between *elementary* and *superficial* instruction must be the first business of every one who aims at the intellectual improvement of his fellows. Yet the distinction is rather assumed to exist, than defined; and this is principally on two accounts: First, because the separation of the two is not always easily made; and Secondly, because, when made, it inevitably leads to consequences which many persons are unwilling to admit.

College of Edinburgh,

Christmas Day, 1848.

ERRATA.

Page 36, line 3 from bottom, *for* "in the reality," *read* "in reality."

— 38, line 9 from bottom, *for* "hence, the assertion is correct,"
read "hence, if the assertion be correct."

— 52, line 8, *for* "insolvency," *read* "insolency."

APPENDIX

Part 10. Line 2 from bottom, for "the result," read "the result."
Part 11. Line 2 from bottom, for "the result," read "the result."
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THE DANGER
OF
SUPERFICIAL KNOWLEDGE.

GENTLEMEN,

Most of you are no novices in study; you have all, probably, enjoyed the advantages of a liberal education. Not to speak of those who may have already completed their university course, and who may be present upon this occasion, the youngest intrant in the Natural Philosophy Class may be assumed to have experienced from early years the benefits of parental discipline, expanding the germs of thought, tending their culture, teaching him to look for solid advantages to be derived from mental and moral government and instruction, to eschew idleness and ignorance as synonymous with shame and degradation. And such as have already passed some years at college, may be believed to have a deeper and more ex-

perimental conviction of these truths. Without supposing *all* to be enthusiasts in learning, it is probably safe to assume that not a single individual, now present, would consent to part with the knowledge which he has actually made good,—to be reduced to the intellectual level of the uninstructed savage,—for the most tempting bribe which the avaricious or the sensual ever coveted.

Happily, we have not the choice given us of whether we will learn or not. To make a choice, the intellect must be already so far cultivated. When cultivated even moderately, the choice is already made. To choose a state of brutish ignorance would be to barter the inestimable inheritance of reason for the possession of misery and guilt. The tempting pictures of the joys and innocence of the savage state, which at one time warmed the fancies of some speculative philosophers, are effectually reversed by the shocking disclosure of its disgusting realities. Common sense and experience, as well as the diviner inspiration of Solomon, tell us that “Wisdom is better than rubies; and all the things that may be desired are not to be compared unto it. I, Wisdom, dwell with prudence, and find out the knowledge of witty inventions. Coun-

sel is mine and sound wisdom; I am understanding, and I have strength. By me kings reign and princes decree justice. I love them that love me; and those that seek me early shall find me.”*

If in the writings of the same king Solomon are to be found expressions of a different, and seemingly opposite import, that very antithesis shows that the choicest gifts may be misapplied, and may even contain the rudiments of a peculiar evil principle, as the wholesomest food may become corrupted and swarm with noisome animalculæ. “In much wisdom is much grief,” says the Preacher, “and he that increaseth knowledge, increaseth sorrow.” “Of making many books there is no end; and much study is a weariness of the flesh.”† But it is sufficiently evident from the context, that Solomon did not always pursue knowledge with discretion, and that to him, as to others of less reputation, the gratification of curiosity, at first purely intellectual, became a delusion and a snare.

It is by no means necessary, Gentlemen, that we should perpetually recur to the fundamental and primordial truths upon which are based great and generally admitted propositions, such

* Prov. viii. 2, &c.

† Eccles. i. 18; xii. 12.

as the duty and privilege of acquiring and increasing knowledge, and of cultivating to the utmost our intellectual, as well as our moral, powers:—but, occasionally, circumstances occur which drive us back to these first principles, and compel us to answer to ourselves for the truth or falsehood of what, perhaps by tacit consent rather than studied conviction, we have always, from the very dawn of reason, admitted. The two-fold aspect of knowledge, to which I have just adverted, as a great good—yet, misapplied, the source of certain and peculiar evils—is one of these fundamental considerations. My attention, and perhaps that of some others who may or may not be now present, having been especially directed to it some time since, owing to an occurrence to which I shall presently particularly allude, I avail myself of this opportunity of treating of at least one part of a subject of no small interest and importance; and, though of the nature of fundamental or primary truth, yet capable of a very immediate and most personal application to *you* and to *myself*.

Knowledge is the fountain, the well-spring of truth. It is truth itself. The acquisition of knowledge is the attainment of truth. Must it not then be good? No generous and instructed

mind can answer otherwise than by a fervent assent. *To know* is felt to be in itself supreme happiness. The sum of all the happiness of which our being is capable, we are assured is—"to know, even as we are known." The charms of demonstration arise not so much from a conviction of the value or utility of a result, as from the felt conviction that our conclusion cannot be gainsaid—that it is *Truth*.

Before we pass on, then, and merely to give a shape to the important consideration before us, let us admit that the pursuit of truth and the acquirement of knowledge are *good*—that they are a fitting and laudable, and the highest, effort and end of man's being—and this more particularly on the following accounts:—

First—Knowledge is good, because it is conformable to nature and reason that we seek to understand the Universe, intellectual and physical, within and around us. Reason, which distinguishes us from the brutes, could have no exercise were we content, like them, to live heedless of any care but the supply of our immediate corporeal wants. The soul is a vast, complex, Divine creation. By leaving it unimproved we sell the birthright of humanity;—improved, we find that every faculty has subject

matter provided for its exercise, and that by that exercise its powers strengthen, and its capacity enlarges. Events, material or political, constituting the History of our globe, our species, and ourselves, furnish to Memory its ample occupation. The abstract ideas of space and form, developed in their consequences by the patient effort of Reason, expand into the boundless science of Mathematics: whilst Words, at first the mere vehicles of thought, suggest the extensive doctrines of Grammar and Philology. The visible connexion of cause and effect in the material world, so capable of being studied, and up to a certain point well understood, introduces us to the wide subject of Natural Philosophy; whilst the faculties of man, and the workings of his own mind, their regulation and the laws of conduct, have furnished to all ages of civilized people grave and abundant matter for the exercise of the acutest powers of the understanding in the sciences of Metaphysics and Ethics. With such endless occupation—so natural, so important, so practical—it is impossible to resist the conclusion that the faculties which can attain so much—which find their counterpart exercise in the works of the Almighty—which, without exhausting, or being

exhausted, are ever arriving somewhat nearer to the complete though unattainable comprehension of the Divine works and ways—that such faculties were not created to lie unused, or given only to tantalize mankind with the consciousness of their possession. Such a conclusion is contrary alike to Revelation, experience, and common sense.

Secondly—Knowledge is good because it leads directly to useful results. Skill and prudence (as the histories of men and of nations equally assure us) gradually supersede brute force, and finally establish a triumphant superiority. The social inequalities of mankind are far more due to the distinguished knowledge and intelligence of the few, than to their pre-eminent strength of body or to fortunate accidents. Even military command is won rather by the qualities of the head than by prowess of hand; and the reverence which, in unenlightened times, the superior science of the priestly order extorted from an ignorant and deluded people, is more fairly obtained, even in these days of general information, from the common mass of men, who yield an implicit, even if unwilling homage, to the commanding talents of the statesman, the orator, the poet, and the engineer.

The useful arts, the offspring of a knowledge of the sciences, impart daily to our fellow men not only conveniences and luxuries hitherto unattainable, but they diminish the greatest of physical evils. They not only enable us to interchange the produce of all climes; to convey ripe fruits fresh from the gardens of the tropics to the banks of the Neva, and ice from Arctic wilds to the centre of the Torrid Zone; but they enable us to cure sickness, assuage or annihilate the intensest bodily pain, to equalize the irregularities of climate and season, and to multiply the produce of the soil. They shorten our anxieties, and may be said, morally as well as physically, to lengthen the term of our existence, by enabling us to accomplish infinitely more within the span of human life than was formerly practicable. Such great and useful ends are amongst the highest, yet not always attainable rewards, of those who devote themselves to the advancement of knowledge. The discoverer of the art of vaccination, and the inventor of the safety lamp, have earned a place not only in the rank of philosophers, but in that of patriots. And if the pursuits of science do not in every instance lead to successes so signal and to triumphs so beneficent, yet those pursuits surely deserve national recognition and encouragement

through the means of which Jenner and Davy worthily acquired their civic crowns.

Again, the pursuit of truth is good, because by it the mind itself is strengthened and improved. It is impossible to overrate the importance of this consideration. Knowledge, like mercy, is twice blessed. It cannot be rightly sought for without one blessing attending; and when attained we find another. Even its aberrations are not always fruitless, as Bacon has so well illustrated in his criticisms on the labours of the alchemists. "Yet to alchemy," he says, "this right is due; that it may be compared to the husbandman—whereof Æsop makes the fable—that when he died, told his sons that he had left unto them gold buried underground in his vineyard; and they digged all over the ground, and gold they found none, but by reason of their stirring and digging the mould about the roots of their vines, they had a great vintage the year following. So, assuredly, the search and stir to make gold hath brought to light a great number of good and fruitful inventions and experiments; as well for the disclosing of nature, as for the use of man's life."*

* Bacon, Adv. Learning, B. i. p. 33. Ed. 1819.

Great as is the importance of this view of the utility of knowledge to men of all pursuits and of every age, in the direction of education its significance is supreme. It strikes at the root of that erroneous and still but partially exploded notion, that the chief end of education is to store the memory with facts and rules of an exclusively practical tendency, — whereas we know it to be far otherwise important to strengthen, by use, the powers of reflection and judgment, to stimulate rather than satisfy a healthful curiosity, to exemplify methods of procedure applicable to a thousand varying inquiries and to a thousand different stations and conjunctures in human life, rather than to cram into an undeveloped understanding and an overgorged memory, a bare sufficiency of practical knowledge to carry the learner through life in a career of disgraceful mediocrity. To borrow again from the sententious wisdom of the incomparable Bacon—"Learning," he says, "disposeth the constitution of the mind not to be fixed or settled in the defects thereof; but still to be capable and susceptible of growth and reformation. For the unlearned man knows not what it is to descend into himself, or call himself to account; nor the pleasure of that

‘*suavissima vita, indies sentire se fieri meliorem.*’ The good parts he hath, he will learn to show to the full, and use them dextrously, but not much to increase them; the faults he hath he will learn how to hide and colour them, but not much to amend them: like an ill mower, that mows on still and never whets his scythe. Whereas with the learned man it fares otherwise—that he doth ever mix the correction and amendment of his mind with the use and employment thereof. Nay, further, and in sum, certain it is that *Veritas* and *Bonitas* differ but as the seal and the print, for truth prints goodness; and they be the clouds of error which descend in the storms of passion and perturbations.”*

Such being the admitted benefits resulting from knowledge, we might now consider, in like manner, some of its misapplications, or errors in acquiring it. But in order to restrict the discussion, I shall proceed at once to the principal subject on which I have proposed to address you—namely, to consider the alleged evils of SUPERFICIAL KNOWLEDGE, (if such evils indeed there be,) their source—the mistakes prevalent about them—and, finally, their correctives in connexion with Intellectual Education.

* Bacon, Adv. Learning, B. i. p. 62.

Pope says—

“A little learning is a dangerous thing;
Drink deep, or taste not the Pierian spring.”*

And a greater than Pope has told us —
“It is an assured truth and a conclusion of experience, that a little, or superficial, knowledge of philosophy may incline the mind of man to Atheism, but a further proceeding therein doth bring the mind back again to religion.”†
And again, quoting the verses:—

“Scilicet ingenuas didicisse fideliter artes
Emollit mores nec sinit esse feros.”

Bacon adds, “It taketh away the wildness and barbarism and fierceness of men’s minds; *but indeed the accent had need be on ‘fideliter,’* for a little superficial learning doth rather work a contrary effect.”‡

That knowledge, by being superficial, may, as is here affirmed, become not only a *less good*, but a positive *evil* in its effects, is a truth so generally admitted by thinking men, that we might assume it as granted, and proceed to inquire how such an injurious consequence may be avoided, had not a very accomplished scholar and skilful rhetorician taken occasion some time

* Essay on Criticism, v. 215.

† Bacon, Adv. of Learning, p. 10.

‡ Ib. p. 60.

since, publicly in this city, and in the presence of some men of learning and many aspirants, to refute the assertion and to ridicule its consequences. I refer to a speech made at the inauguration of a literary association in Edinburgh, by Mr. Babington Macaulay, then member of Parliament for the city: a speech which must be considered to have been the result of premeditation, since its author journeyed from London on purpose to make it, and which, though known to me only from the public prints, (not having been present when it was spoken,) we must also assume to have been correctly reported since a vigorous protest taken at the time against its leading assertions by an able writer of the daily press,* produced neither denial nor qualification on the part of the speaker.

If both Bacon and Pope be wrong, as well as the numerous philosophers and moralists who have reiterated their opinion,—if a little learning be only a lesser good, innocent as it is delightful, then mankind has learned from Mr. Macaulay a new lesson. But if untruth lurk in the new doctrine thus propounded to the willing ear of thousands who are ever ready to take the short and flowery road in search of know-

* “The Times” Newspaper, Nov. 9, 1846.

ledge, and to trick out their slight attainments in the guise of deep erudition and comprehensive generalization,—then the eminence of the speaker, his wonderful powers of memory, his play of fancy, flow of language, and liveliness of satire, only render the refutation more imperative.

The matter is indeed a grave one, and a right judgment regarding it lies at the root of sound education, more especially in the physical sciences, in which it is, perhaps, more easy than in any others to attain some show of profundity. The argument in favour of superficial knowledge challenges the more close examination, because it is manifestly addressed to the dearest propensities of our egotistical nature,—love of ease, pride, and ostentation. How could it then fail of being an acceptable tribute, a popular argument to the young and inexperienced? It is matter for regret when a man of eminence broaches such a doctrine; but it is one which, nevertheless, so far as my feeble voice may be heard, I will endeavour plainly to refute. My reply will be rather to the spontaneous suggestions of every one's own heart who seeks knowledge, in the unguarded moments of self-indulgence and self-gratulation, than to any

individual advocate; but as Mr. Macaulay has found for these promptings a voice, and has registered these whisperings from within in the imperishable stereotype of the press, I will state his argument (which is a very simple one) in his own words, and endeavour to find an answer to it.

“I must confess,” said Mr. Macaulay, after quoting Pope’s couplet, already recited, “that this danger (that arising from superficial knowledge) never seemed to me to be very threatening, and that, for this reason chiefly, because I never could prevail on any of those persons who entertain such apprehensions to let me know what was their standard of profundity. The argument pre-supposes that there is some line between profound knowledge and superficial knowledge, similar to that between truth and falsehood. I know of no such line. * *

* * * When we talk of deep and shallow, we are comparing human knowledge with the vast mass of truth which is capable of being known, and to which probably in the course of ages human minds will actually attain. If that be the meaning, then we are all shallow together, and the greatest men that ever lived would be the first to confess their shallowness. * * *

But if this is not the standard, what constitutes the standard? Is it the same for years together? Is it the same for generations together? Is it the same in two countries? Is it not notorious that the profundity of one country is the shallowness of another—that the profundity of one generation is the shallowness of the next? * * *

That same knowledge which entitles Rammohun Roy to be called the most profound among the Hindoos, would have made him but a superficial member of this institution. That knowledge of geography which entitled Strabo to be called the Prince of Geographers, would now be considered mere shallowness on the part of a girl at a boarding-school. The truth is,” adds Mr. Macaulay, “that changes take place something like what Gulliver experienced. He was first shipwrecked on a country of little men, and immediately he was a Colossus among them. He strides over the walls of the capital, he stands higher than the tops of the temples, he devours for breakfast a whole granary, eats a herd of cattle for dinner, and washes them down with the contents of a cellar. In a little while, he finds himself in a country of giants: then, instead of taking the people in his hand as he did at Lilliput, he is himself taken in the

hands of his masters. The monkey runs off with him to the chimney-tops, and the dwarf drops him in the cream-jug and leaves him to swim for his life. Now whether is Gulliver a tall or a short man? In the same manner the intellectual giants of one age become the intellectual pigmies of the next, and if all those effects flowed from shallow knowledge which have been stated, then it must have been the greatest of all evils that in the thirteenth century there should have been such a thing as a profoundly learned man." A proposition which Mr. Macaulay considers as established by the consideration that a mechanic can now learn, in a few days, more about the celestial bodies from Herschel's Astronomy, than the astronomer of the thirteenth century acquired in his whole life; and that Doctor Faraday, in like manner, teaches more chemistry to little boys and girls in his Christmas holiday lectures than all the alchemists ever knew.

Such is the substance of Mr. Macaulay's argument, nearly in his own words.* At the outset, it will, I think, be admitted, that common sense and due self-respect rebel at such a

* His speech, as printed in the Edinburgh newspapers of the time, is given at length in the Appendix.

conclusion, enforced though it may be with the humour of Swift, and expressed in well-turned periods. The youngest amongst us perceives, as it were intuitively, that the inferences are too flattering to be true—the most inexperienced judgment suspects some little stratagem when too much pains are taken to stimulate our self-love—when a man of genius, well capable of sustaining our understandings with solid food, condescends to tickle our intellectual palates with sweetmeats and trifles. But if so, there must be a fallacy in arguments seemingly so plain and unimpeachable.

In the first place, it must be observed, that the evil results alleged against superficial knowledge apply to the mind itself, not to the cause of learning alone. The evils are what may be called *indirect*, but not on that account less important; for we have seen that the greatest ends and benefits of knowledge have also this indirect character. Thus, a little, or superficial learning, inclines the mind to Atheism, but a further proceeding brings it back again to religion. Again, the study of the arts and sciences takes away the ferocity of men's minds and promotes humanity and civilization. But a little superficial learning, Bacon tells us,

rather works the contrary effect. And if we read, with the context, Pope's celebrated passage,* we find that the danger of which he speaks in connexion with a little learning, whose

“Shallow draughts intoxicate the brain,
And drinking largely sobers us again,”

is, not that a man shall be less erudite and profound by studying a little than if he studied much, but is a danger which

“Conspires to blind
Man's erring judgment, and misguide the mind.”

It

“Is PRIDE, the never-failing vice of fools.”

* “Of all the causes which conspire to blind
Man's erring judgment, and misguide the mind,
What the weak hand with strongest bias rules,
Is Pride, the never-failing vice of fools.
Whatever Nature has in worth denied,
She gives in large recruits of needful pride;
For as in bodies, thus in souls, we find
What wants in blood and spirits, swelled with wind;
Pride, where wit fails, steps in to our defence,
And fills up all the mighty void of sense.
If once right reason drives that cloud away,
Truth breaks upon us with resistless day.
Trust not yourself; but your defects to know,
Make use of every friend,—and every foe.

“A *little learning* is a dangerous thing,
Drink deep, or taste not the Pierian spring:

The first fallacy in the argument we are considering appears to be this, that the littleness or greatness of the amount of knowledge is in itself the sole and universal cause of its effects being good or evil; whereas, what is great to one mind may be really and truly small to another. A dose of medicine, or the same measure of food, acts differently on the healthy and on the sick; on the child in arms, and on the man come to full strength. It may be said to be much or little; not in itself, but only according to the effect which it produces in each case. The meal which satiates the child, leaves

There shallow draughts intoxicate the brain,
And drinking largely sobers us again.
Fired at first sight with what the muse imparts,
In fearless youth we tempt the heights of Arts;
While from the bounded level of our mind
Short views we take, nor see the lengths behind;
But more advanced, behold, with strange surprise,
New distant scenes of endless Science rise!
So pleased at first, the towering Alps we try,
Mount o'er the vales, and seem to tread the sky;
The eternal snows appear already past,
And the first clouds and mountains seem the last;
But, those attained, we tremble to survey
The growing labours of the lengthened way;
Th' increasing prospect tires our wand'ring eyes,
Hills peep o'er hills, and Alps o'er Alps arise."

Essay on Criticism, v. 201, &c.

the labourer fainting from want; the dose of physic which acts genially upon one invalid may to another, suffering under a different malady, be the very herald of death. We of this generation, (as was long since profoundly remarked,) though we be the last birth of time, are yet ancients in intellectual experience, which we derive by inheritance from our predecessors. *Antiquitas seculi, juvenus mundi.* In the physical sciences, at least, the wise of the thirteenth century were as babes compared to us; how, then, venture to draw a parallel between the moral and intellectual influences of the same quantity of positive knowledge now and then?

How ridiculous would be the notion, that the studies of all periods of human life, from boyhood to the grave, were to be measured by one common standard—their moral influence and discipline estimated solely by the amount of knowledge they contain. The reading which in childhood calls forth all the dormant energies of the mind, and fires the spark of early genius, becomes, a few years later, the daily and unregarded task of the plodding schoolboy; then the pastime of maturity, and finally, perhaps, in extreme old age, the same page is conned

anew with effort, by the vacant eye of imbecility. In like manner, the philosopher of five hundred years ago was, let us admit, but a child in the natural sciences, though perhaps in these only; his mind was not prepared to receive the knowledge which even the schoolboy or school-girl of the nineteenth century can acquire with ease, because the experience of their lives, short as they have been, has brought them into familiar contact with objects and events which have developed corresponding ideas in their minds. It would have been an intellectual surfeit to Roger Bacon or Leonardo da Vinci. *Their* minds, quietly feeding on the knowledge of the time which they could draw in, found profitable and sufficient matter for digestion in the crude sciences of their day, which they helped to regulate and turn to use. In so doing, they relished what was to them a richer banquet than any amount of truth merely stored in the memory, or propositions coldly admitted as true by the reason can afford to their more favoured, though ungracious, posterity. They exercised to the full the faculties which God had given them, within the limits of the development of ideas handed down by their fathers; and their reward was equally great to

them as ours will be to us, if we know how to appreciate it—the consciousness (namely) of efforts well and successfully directed, of minds strengthened and hearts purified, of progress made and truth attained, even although the goal of infinite knowledge and perfection be really as distant from human endeavour *now* as it then was, and as in this world it ever must remain. The wealth of knowledge is like the heaven-descended manna of the wilderness. The store of it which we make depends upon our wants and our opportunities,—more or less in amount, but equally available for our personal necessities and our capacities of enjoyment,—provided that it be sought with diligence and in faith, for use and not for accumulation. “They that gather much have nothing over, and they that gather little have no lack.”

The terms “great” and “little,” then, as applied to knowledge, are indeed, as Mr. Macaulay observes, unmeaning, if the relative to which the comparison refers be the whole amount of truth, or even of what is knowable by man. It might seem plain, therefore, that, in speaking of “a little learning,” some other relative is to be sought, which is evidently the recipient—the mind, not the knowledge or the thing re-

ceived. It is even repugnant to common sense to speak *absolutely* of a little knowledge being a dangerous thing. If it be dangerous, it is dangerous to something sentient and capable of injury—to the human understanding, which receives the knowledge; and thus the effect may be expected to vary, not according to the absolute measure and amount of the knowledge, but with reference to the capacity, the habits of thought, and the previous attainments of the mind, to which it is addressed.

Thus, to take an illustration by no means inapposite. Daily experience tells of the danger to a man's welfare, respectability, and enjoyment, of a sudden influx of fortune. A humble tradesman, we will suppose, gains £1000 by an unexpected legacy; instead of prudently applying the interest to the gradual improvement of his condition, by enlarging his means of pursuing an honest and laborious occupation, he sees no end to a capital which dazzles him by its magnitude, and offers an irresistible temptation to extravagance and display. He surrounds himself with needless finery; he acquires habits of intemperance; and when all is spent, he finds himself where he was in point of fortune, but his humble trade is ruined, his habits of

industry gone for ever, and his character becomes as bankrupt as his estate. It is clear that, to this man, riches, which well used are surely a blessing, were dangerous indeed. But had the same lucky chance happened to a nobleman possessed of an income of £10,000 a-year, the chance accession of £1000, acquired, we may suppose, in the very same way, disorganizes none of his domestic arrangements, produces no extravagance, results in no disgrace. On the contrary, this unexpected addition to the year's receipts, is spent perhaps in some charitable act; or, it may be, in some blameless indulgence. He builds a school, or he enlarges his mansion. Here the self-same sum of money has been productive of no evil, perhaps of good; and *that*, supposing the moral character of the two persons in different stations of life to be equally blameless. One thousand pounds was a dangerous gift to the one, and a safe one to the other. We apply, then, with Mr. Macaulay, the fable of Gulliver, and we ask whether £1000 is to be called a large sum or a small one? In this case, as in that of learning, large and small depend upon our previous acquisitions and habits; upon the ideas which anything external to us, be it an amount

of knowledge or an amount of money, excites in our minds. Had the tradesman we have supposed, by a long course of industry and prudent management, become possessed of as large a capital as the nobleman, the bequest of a far larger sum could not have disturbed his moral equilibrium.

We might easily (were it worth while) extend the comparison between the standards of knowledge and of wealth, and show that in either, much and little are relative terms—not merely as regards individuals, but also different nations and ages. Thus, the *value* of money is not more unequal in London and on the Guinea coast, than is the intellectual currency of Ram-mohun Roy, the wise Hindoo, compared to that of the Edinburgh apprentice; and the difference of value of the same fact in science to Roger Bacon in the thirteenth century, and to Dr. Faraday in the nineteenth, is neither more nor less real than the difference of value of a penny of Edward I. and a penny of Queen Victoria.

A *little* learning, then, only expresses an accessory quality of that which renders it dangerous. The most material circumstances usually coupled with the smallness of amount, and here to be included with it, are, that *it is superficial*

in its quality and *sudden in its acquisition*. If we say that *superficial* knowledge is dangerous, and that *sudden* knowledge is dangerous, we have already made a step in our analysis. Sudden knowledge is necessarily superficial—not so much because it is, of course, limited in amount, as because it is cumbrous, extraneous, and uneasy. It is like the armour of Saul on the slender form of David. Such knowledge is often an unmixed evil, making persons, naturally timid and irresolute, act with spasmodic and ill-directed energy. Feeling that they handle a weapon which they are proud to possess, in their excitement they long to show their prowess. A little power, like a little knowledge, is dangerous to those unused to it; but the amount which is dangerous depends upon the administrative talents of him who wields it. The less it is, we know that it is apt to be the more vexatiously exercised; and the magnanimity of great conquerors and powerful monarchs, though deserving of praise and certain to obtain it, is yet perhaps to the moralist a less proof of true dignity than forbearance and courtesy on the part of those whose authority is either transient or limited. When we see a man, especially a young one, placed suddenly in a position of responsibility, his

inexperience (which is always a want of knowledge and of that knowledge most valuable in kind, and properly called *wisdom*) is of course palpable to all lookers on—and a breathless pause is commonly observable, at least on the part of those who may be in any way affected by the good or bad conduct of the aspirant. If he had no knowledge of affairs at all, the case would be different. As a child or a minor, his property would be put under trustees: it is because his knowledge is little, his judgment of things still superficial, his call to act sudden, that men look on with doubt, and justly call his position dangerous. He is a free agent; if he but turn to the one hand, dignity and respect await him, if to the other, his knowledge becomes a curse, since it but gives the rein to temptation, and the unlucky Phaëton falls headlong from his brief exaltation.

Thus, whether power, wealth, or knowledge be the prize, its possession, by those unprepared to use it, becomes to them a source of danger. In all these cases it is experience, or the *wisdom of experience*, which renders those gifts honourable, safe, and fruitful.

Leaving these general illustrations we will

now endeavour to point out plainly and concisely the leading dangers arising from superficial and sudden knowledge. And, *first*, such knowledge is of necessity *empirical*—that is, acquired by memory or by a limited experience, and not deduced from extensive study and general principles. In every branch of practical science, the evils of empiricism are familiarly known. The Physician who pretends to cure all diseases by one or a few remedies, which he has found successful in particular cases, is justly branded as an empiric. The moment that he reaches the limit of his narrow experience, he is literally *at his wits' end*; and no phrase can express more forcibly the unhappy perplexity of the dilemma in which he is then placed. He must either acknowledge his incapacity, or change his real character from that of a simple empiric to that of an impostor, by affecting a knowledge beyond the little which he possesses, and trying to inspire a confidence which he dared not feel. So the Lawyer, entrusted with an important case, for which he has *read up*, as it is called, or acquired suddenly and empirically the knowledge which he expects to be called upon to use, finding in the middle of his pleading that his principal argument is to be

disallowed, his principal witness refused a hearing, or a cherished precedent upon which he had founded his hopes of success, declared inapplicable, has no alternative but to abandon a cause for which perhaps much might be said if he possessed a sufficient knowledge of general principles whereon to found a new argument, or at least to discover the weakness of his adversary, and thereby place him in a similar predicament. But the empiric Statesman is the most dangerous of all, because of the vast interests which are compromised by his ignorance and presumption. "A little knowledge" is absolutely necessary for him to be mischievous. Were he grossly unenlightened, he could have no chance of ruling. The greatest knowledge and the longest experience may well fail in fitting every man for so arduous a post; but the danger to be feared from the man of superficial and sudden knowledge is, that the principles of statesmanship and the lessons of history are unthought of and unheard by him; his sagacity does not even extend so far as to perceive the destructive tendency of his own measures; whereas, if a man ripe in knowledge err, it is a part of that knowledge to be the first to perceive and remedy his mistake.

The fallacies of empiricism run into two extremes ; either a slavish adherence to authority, or a total disregard of it shown by reckless innovation. The former was the fashionable empiricism of the middle ages — the latter, that of our own time. A man may be as blind in the application of the dogmas of another as of his own limited experience ; but either course must end in presumption and imposture, or else he is brought to a sudden stand. In the practical sciences, save when accident comes to his aid, the fate of the empiric is sealed—the patient dies—the cause is lost—and the too confiding commonwealth is betrayed into ruin.

Empiricism is dangerous principally to others ; but superficial knowledge is often not less injurious to our own understandings. The deceit which the confirmed empiric practises on the world, the dabbler in the sciences unconsciously practises on himself. That he may be quite *sincere*, the total ruin of many a heedless speculator amply proves. But besides the material losses to which he may subject himself, he inflicts a more lasting injury upon his own intellectual frame. Far from enjoying the blessings which well directed mental labour confers, he becomes so elated by the knowledge of certain

facts and reasonings to which he has been hitherto a stranger, that he looks down with complacent contempt upon his former self, and his former equals. Being absorbed by the simultaneous acquisitions which he has made, a little confused by their number, and dazzled by their variety, he is naturally more occupied in drawing comparisons between what he once knew and what he now knows, than between what he knows now and what others know already and he may know hereafter. The effects of sudden knowledge may be compared to those of sudden light. He who has groped on in the dim twilight of ignorance sufficiently well to fulfil mechanically the routine of duties within his reach,—when exposed to a glare of light (though it may not after all be very great), finds himself far more bewildered than formerly; and if he make haste to act before the dazzling has subsided, he will probably run into mischief, or at least excite the ridicule of by-standers who have learned to use rationally the illumination which has overpowered him. Such an one is the victim of Conceit; the earliest encountered of all the barriers to true wisdom, and that on which a large number of aspirants do actually make shipwreck. 'Tis lamentable, but true; and yet

we find some one ever ready with the welcome whisper, "A little knowledge is *not* dangerous." There is a danger, a danger to which all are exposed, but not equally—a danger which, though considerable, is not inevitable—a danger which arises from not looking onwards and upwards—in coveting repose, in considering our acquirements as ended and complete in themselves; or, in the language of Bacon, in using knowledge "as a couch whereupon to rest a searching and restless spirit, or a terras for a wandering and variable mind to walk up and down with a fair prospect: or a tower of state for a proud mind to raise itself upon, and not as a rich storehouse for the glory of the Creator and the relief of man's estate."*

One of the most cherished fallacies of self-conceit, is a confusion between the powers of mind which serve to originate great discoveries, and those very inferior and comparatively commonplace powers which serve to apprehend and apply them. That knowledge which is simply acquired by reading the works of others, and noting the facts and conclusions which they unfold, may, in very many instances, be justly termed "a little knowledge," because the effort

* Advancement of Learning, p. 31.

of mind which it calls forth is small, and the acquisition is in a great measure superficial and empirical. The danger is perhaps greatest in those sciences called *exact*, such as Mathematics and Natural Philosophy, because from the definiteness of the results, and the comparative facility of detecting errors in the steps of proof, the *conclusions* may be readily apprehended even by those who are incapable of following the demonstration; and the demonstration may be facilitated, or remodelled and positively improved, by persons quite incapable of making themselves any advance in science. That any one should for a moment confound the state of mind of a person capable of composing Newton's "Principia," and of originating the "Theory of Gravity," and that of a reader of the same work, even if he has risen from it with a complete comprehension of every argument it contains, seems hardly conceivable. Yet those who see no distinction of one sort of knowledge from another, except in the facts with which it makes us conversant, evidently fall into this confusion. They forget that facts have nothing great or little in themselves. The greatness is in the ideas they disclose—the powers they call forth—the light they spread—the usefulness they gene-

rate. It is in the individual mind that we must see reflected, as it were, the character of knowledge relative to that mind, and there alone we can judge of its effect.

Thus, a man may discover truth entirely for himself, as, for example, Kepler did, when he discovered the primary laws of the planetary motions. Or he may be led to perceive and apprehend it as an act of his understanding, by receiving a mere indication or suggestion from another, as Galileo constructed a telescope from a hint of the toy of Jansens, the Dutch spectacle-maker: or, he may extend and enlarge the knowledge which another has added to the common stock, as did the great mathematicians of the eighteenth century, working upon Newton's theory of Gravity: or, he may passively assent, as an intelligent reader, to the truth of what is set before him, as does every day the competent student of Euclid's Elements: or, finally, he may receive on trust the *conclusions* only of another, without attempting to analyze the proof, or comprehend the reasoning, which is the humble acquisition of many of the readers of "popular science" of our own time. All these are various ways in which the knowledge of the same facts may be addressed to, and accepted by, the understand-

ing. It were childish to suppose that the *effects* of this knowledge could be the same, either in kind or degree, in all these cases, on the character and habits of thought of the person acquiring it. With, perhaps, the sole exception of their applications to the useful arts, the facts and discoveries of a ruder age minister in an equal degree to the same good and great ends as those of another more advanced in science and civilization. The method of finding specific gravities was, in the eyes of Archimedes and of his contemporaries, as great a discovery as was the Analysis of Light to Newton. The invention of decimal arithmetic and the Arabic notation—now so familiar, that we regard it as almost an instinctive method of computation—was an advance as real and as admirable in its kind as the inventions of algebra and of logarithms. Ideas which we know tasked the highest powers of mankind in one age, became familiar even to the minds of the young in another, as the school-boy scarcely escapes correction for stumbling in the proof of the square of the hypotenuse, for the discovery of which Pythagoras offered a hecatomb to the gods. Yet in ~~the~~ reality, the first steps are the most difficult, and although almost no one now reads Kepler's "Commentaries on Mars," and only a few attempt to master

the third book of the "Principia" we have no reason to vaunt ourselves upon having been able to supersede these venerable and immortal works by others, in which the same things are exhibited and proved in a clearer, easier, and even a more rigorous manner. If any one, however deeply instructed in the arcana of modern science, feels rising in his mind even a casual and almost involuntary sentiment of superiority to his great predecessors, (to whom in fact he owes everything,) let him not only suppress it as unworthy and ungrateful, but let him regard it as a warning that his own views concerning knowledge and the human mind are taking a bad direction,—that however great his reputation may be amongst his contemporaries, "a little learning" is becoming dangerous to him. The simple truth is, that if in matters of physical and mathematical knowledge and in the arts, we stand higher than our predecessors, it is because we began to build upon a loftier foundation, which was none of our making; and though much of the labour of past ages is conveyed away out of sight, and much more is unobserved, because it is surmounted by statelier and more elegant building,—but for the gigantic perseverance of those hard-working and devoted men who preceded us, we had even now been cutting our

foundations downwards instead of rearing our towers towards heaven; we had been toiling in the quarry instead of carving the pinnacles of our temple.

The very rapidity of discoveries in some branches of knowledge, shows that to advance is now easier than formerly; the truly great are those who originate. And though many now make discoveries truly their own, yet it is quite impossible for any one to estimate how much assistance he has derived from the examples of his ancestors and contemporaries, and from the education, intellectual and sensational, which his commerce with the busy struggling world around has infused into him. It would be bold to affirm that the highest types of the human intellect improve as the world grows older. Plato and Homer, Bacon and Shakespeare, are not *progressive* in the intellectual scale; hence the assertion ^{is} ~~is~~ correct, that "the intellectual giants of our age become the intellectual pigmies of the next;" these time-honoured names must wane in lustre as the world grows older. To make the supposition is to expose the absurdity of the dogma which should establish it. It is not too much to affirm that the age in which the master spirits of the world shall be regarded as intellectual dwarfs, must be one in which man-

kind no longer retain their present constitution; in which they have risen immeasurably above—or fallen immeasurably below—the existing standard of humanity. It is a profound remark of Bacon, himself, that in the sciences the originators go farthest, but in the mechanical arts, their followers. Yet even in the latter case, the power of mind required to originate, and not merely to perfect and extend, great inventions, is pretty equally distributed. The structures of Egypt may at least vie with the greatest efforts of modern engineers; the art of printing more than equals any invention of the eighteenth or nineteenth centuries, whether in its ingenuity or in its great social results;—and the obscure or doubtful authors of the compass and the thermometer have acquired a firmer title to the gratitude of posterity, than even the most gifted improvers in practical science amongst their successors.

How false, then, as well as arrogant, is the self-gratulation of those, who, forgetful of the struggles and painful efforts by which knowledge is increased, would place themselves, by virtue of their borrowed acquirements, in the same elevated position with their great teachers—nay, who, perceiving the dimness of light and feebleness of grasp, with which, often at first,

great truths have been perceived and held, find food for pride in the superior clearness of their vision and tenacity of their apprehension. "It is true," to use the words of Dr. Whewell, writing of such persons, "they have had no difficulty in thoroughly adopting the truth; but that has occurred because all dissentient doctrines have been suppressed and forgotten; and because systems and books, and language itself, have been accommodated peculiarly to the expression of the accepted truth. To despise those who have, by their mental struggles and conflicts, brought the subject into a condition in which error is almost out of our reach, is to be ungrateful exactly in proportion to the amount of benefit received. It is as if a child, when its teacher had with many trials and much trouble prepared a telescope so that vision through it was distinct, should wonder at his stupidity in pushing the tube of the eye-glass out and in so often." *

The temptation to a disparaging estimate of our predecessors and masters, is perhaps greatest in sciences markedly progressive, like most of those connected with physics. It may be admitted to be a position not devoid of danger to a young man, to find himself capable of solving,

* Philosophy of the Inductive Sciences, II. 525.

with almost mechanical facility, problems which the mathematical heroes of a century ago used to propound to one another as challenges of their highest skill; or as a student of chemistry, throwing aside as useless and superannuated the text books and analyses, regarded as models twenty, or even ten, years before: or to find that, in more stable and permanent sciences, the love of novelty, as well as that of improvement, leads some men to characterize as antiquated and useless, the very persons who not many years before were making the latest improvements in their respective departments, and who themselves trod not less fast upon the heels of their predecessors. The activity of mind, the earnestness, the struggle after truth, the hopeless perplexity breaking up gradually into the fulness of perfect apprehension,—the dread of error, the victory over the imagination in discarding hypotheses, the sense of weakness and humility arising from repeated disappointments, the yearnings after a fuller revelation, and the sure conviction which attends the final advent of knowledge sought amidst difficulties and disappointments,—these are the lessons and the rewards of the discoverers who first put truth within our reach, but of which, we who receive it at second-hand can form but a faint and lifeless conception. To

reap in full the benefits of that knowledge, we must not only receive and accept the bare truth which it unfolds, but we must take a lesson from the diligence and the skill displayed in the research, and endeavour ourselves to apply it to inquiries which may bear some analogy (very remote perhaps) with reference to our state of knowledge and means of employing it, which the work we study bears to the previous acquirements and opportunities of its author. Take, for example, the "Principia" of Newton. The honest and capable student rising from its perusal, is ready to exclaim at every page, "What invention! What skill! What profound anticipations! What overpowering superiority!" And the further he reads, the less will he be disposed to compare the frame of Newton's mind after writing, and that of even his worthiest, his most intelligent and teachable disciple after reading, his masterpiece. But if, in place of this intelligence and teachableness, the end and aim of the scholar were merely to possess himself of the methods and the results,—if instead of being filled with humble reverence in the presence of an intellect so penetrating, and with generous zeal to learn even the humblest lessons in the discovery of truth, from one who in his generation opened fresh worlds for the

conquest of the human understanding, — if instead of this, he is ready to exclaim, “Ah, poor Newton, he was but a bungler after all;— that crabbed geometry and those clumsy quadratures were well enough for the seventeenth century, but we understand these things better now: my tutor, Mr. So-and-So, tells me he knows the calculus much better than Newton did.” If, moreover, he declare that if a little knowledge be dangerous, Newton were in far greater danger than he,—we can only advise him to learn that facts are not knowledge any more than books possess understandings,—and to prove by experience the difficulty of making one step forward sufficiently decisive and important to preserve his own memory or reputation even for a few years, from the oblivion or contempt to which he is so ready to consign his predecessors.

And in those cruder, yet most interesting and important sciences, such as chemistry, meteorology, and geology, in which every year not only brings new facts to light, but renders doubtful, or convicts of error, some deduction or some theory once supported by a man of reputation, the successful aspirant, if he can read at all the lessons of the past, has the least possible ground for arrogance. For all his self-love can hardly

conceal from him the moral certainty that his own labours, though they may displace the speculations of his predecessors, will in their turn (exactly in proportion to the facility and completeness with which they have done so) be plunged under the surface of the passing wave, to reappear perhaps in time, so changed in form that posterity shall scarcely recognise his share in their creation.

Still mankind, though not over grateful to their intellectual benefactors, have ever had in honoured remembrance those who first achieved even an imperfect knowledge of important truths. That which is *first* has a title to be imperishably remembered and the author respected, because it was not only pre-eminent in excellence and worth in its day, but is the parent of perpetual improvements, the virtue and usefulness of which it justly includes:—whilst that which is merely an improvement, though it be pre-eminent in its day, is liable to be utterly superseded and forgotten. The spy-glass of Galileo, which would scarcely amuse an intelligent child of our time, is a more memorable instrument than the greatest refractor of Fraunhofer; and the leaky model of the steam engine on which Watt first exercised his skill, is a greater trophy of power than all the machinery of Soho. If we would

implant a principle dangerous to the intellectual character and fatal to real progress, it would be that of measuring the value of our acquirements by any *fixed* standard whatever. Yet, Mr. Macaulay says, "The knowledge of geography which entitled Strabo to be called the prince of geographers, would now be considered mere shallowness on the part of a girl at a boarding-school." The contrary is the fact. The knowledge of Strabo *was* a profound knowledge of geography, and it produced the effects of profound and well directed knowledge—it was a knowledge ever increasing, yet ever tempered by the conviction of ignorance—a knowledge which taught his contemporaries to enlarge their acquaintance with the common family of man, to extend commerce and to preserve human life,—whereas the knowledge of the boarding-school, unless it be tempered with more humility that can be reasonably looked for whilst such comparisons are uttered by men of talent upon such occasions, will begin in ostentatious displays of memory, and end in pedantry and contempt.

Thus we have seen that these evils arise from superficial or sudden knowledge : *first*, that it is inapplicable, or less applicable than knowledge duly stored and diligently cultivated, to general

use in the practice of the arts and professions : and *secondly*, that being apt to dazzle the learner and foster self-conceit, it enervates instead of strengthening the mind, and is dangerous because it leaves a man *less* open to improvement and self-cultivation than it finds him. *Lastly*, we may infer that sudden or superficial knowledge, when it becomes epidemic, and takes the place of sober learning of slower growth, and more deeply rooted in the understanding, becomes a positive barrier to the further increase of knowledge : in other words, wanting vitality, it is unfruitful. But this consideration is so far included in our last discussion, as to require but little enforcement now. For knowledge cannot beget knowledge of itself, but depends for its life and nutrition upon the mind which entertains it, as the tree cannot live and propagate but in a congenial soil. Meditation is the one thing needful to bring to maturity any product of the mind : it is like the sunshine which is indispensable to vegetable life. But meditation is incompatible with superficial knowledge. Great penetration and quickness, a copious and ready memory, may elevate a man to a high rank in social popularity, but such is not commonly the position of those who have enlightened mankind by their wisdom, or benefited them

by their inventions. The power of abstraction has a character usually sober and severe. Time is the unfailing requisite for its cultivation and exercise. Mere habits of expertness or dexterity impress us with no respect or confidence: sagacity, judgment, and real invention always do. A juggler or conjuror amuses us, and by his skill even extorts from us a kind of admiration, but we should not employ him to build our ships, or to direct our railways. We engage an engineer of education and ability who is perhaps wholly devoid of manual dexterity himself. In philosophy it is the same. The empiric who has acquired a sort of sleight-of-hand acquaintance with a parcel of facts, and uses them ingeniously, may outshine for a time the more profound and practical student, and the latter may even be unable to cope with him in his own narrow field of display. But for the production of *fresh* knowledge, or substantive additions to the capital of the human mind, our superficial aspirant is incapacitated by the very habits which have gained him a popular reputation. We have it on the authority of Newton himself, that if he was in anything superior to other men, it was in the faculty of patient and concentrated thought. "I keep the subject constantly before me," said he, "and wait till the first dawnings

open slowly, by little and little, into a clear light"—a sentence which speaks to the experience of all who have accustomed themselves to habits of patient study. But the superficial thinker has no such dawn. Facts are things which admit of no degrees. He knows them, or he does not. He is in a blaze of what he calls light, or else he is in total darkness. He evidently never thought in the way that Newton thought: his knowledge, if knowledge it be, comes through some different avenue. The glow of information on which he prides himself is like the transient gleam which an ice-clad mountain may reflect, beautiful, but cold;—whilst true science, like fire on the hearth, warms and enlightens our home, and lends by magic contact the vital spark which diffuses its blessings elsewhere.

But, further, even those studies are to be regarded with some degree of suspicion, which, though far from superficial in themselves, inasmuch as they require the application of much time and close attention, are yet subject to some of the drawbacks of superficial knowledge. Such are, for instance, (1) the cultivation of subjects of mere erudition, which, although highly praiseworthy and profitable, in so far as they turn our thoughts upon the opinions of

great and good men in all ages, upon questions of the highest importance, yet degenerate into trifling and unpractical exercises of memory when the intellectual act is confined to mere readiness in the citation of numerous and often obscure authorities, instead of determining and accepting truth as the final good, towards which the opinions of others have served but to enlighten and direct us, without possessing in themselves, and as opinions, any special value.

(2.) The deliberate choice of inquiries obviously more curious than useful, as mere recreations and amusements of the intellect. These, indeed, are suitable enough as exercises and stimulants during the childhood of the understanding, but are to be put away, with other childish things, when we enter upon the business of life, and find so much more to occupy us than life gives time for, in intellectual tasks equally calling for patience and skill, but evidently tending to increase human knowledge, and not merely to diversify it. There is no branch of science or the liberal arts which does not practically present such a subdivision, although the line between the useful and the curious can never be accurately drawn: and the error is rather in the spirit which cultivates

details for mere amusement, and to the exclusion of more comprehensive inquiries, than in the study itself, for such technical and even mechanical exercises are proper and useful within bounds, as teaching dexterity and precision in the application of general principles.

(3.) Those studies which assume first principles, and consist in the deduction from them of remote though necessary consequences, are to be regarded with a certain degree of caution in this respect, that though they may be profound and various, they exercise but one side, as it were, of man's intellect, that which deals with necessary and demonstrable truth. Of the *exclusive* students of such subjects it has been well observed by Dr. Whewell, that "their thoughts dwell little upon the possibility of the laws of nature being other than we find them to be, or on the reasons why they are not so; and still less on those facts and phenomena which philosophers have not reduced to any rule, which are lawless to us, though we know that in reality they are governed by some principle of order and harmony. * * * They are not carrying us to any higher point in the knowledge of nature than we had attained before: they are only unfolding the consequences which

are already virtually in our possession, because they were implied in principles already discovered: they are adding to our knowledge of effects, but not to our knowledge of causes: they are not making any advance in that progress of which Newton spoke, and in which he made so vast a stride, in which ‘every step brings us nearer to the knowledge of the first cause, and is on that account highly to be valued.’* This kind of intellectual exercise (the deduction of consequences by a logical process from assumed premises) is evidently that to which Bacon refers in his celebrated remark on Atheism—“for,” he says, “in the entrance of philosophy, when the second causes, which are next unto the senses, do offer themselves to the mind of man, if it dwell and stay there, it may induce some oblivion of the highest cause.”† But, in another place, he has admirably described the useful effects of learning, rightly directed and pushed beyond the mere investigation of logical or mathematical conclusions: “It taketh away all levity, temerity, and inso-

* Whewell’s “Bridgewater Treatise,” p. 331, &c. The whole chapter “On Inductive and Deductive Habits” eminently deserves the student’s attention.

† Adv. of Learning, p. 10.

lency, by copious suggestions of all doubts and difficulties, and acquainting the mind to balance reasons on both sides, and to turn back the first offers and conceits of the mind, and to accept of nothing but [what has been] examined and tried.”* Here we find plainly stated the dangers of one-sided or superficial learning, — viz., “Levity, temerity, and insol~~u~~ency,” we have the cure of it by a further prosecution of study in the right direction, “the copious suggestion of doubts and difficulties,” and the habit of seeking truth by “balancing reasons on both sides.” And let us ever well remember that though the special dangers of “a little learning” are those which beset the smatterer at the entrance of his career, yet errors similar in their origin and consequences often affect those to whom the term “superficial,” in its common acceptation cannot with any justice be applied; those who by exclusive devotion to one corner of knowledge, or to one kind of reasoning, have acquired a just and almost an oracular reputation for learning in that particular department; but who, by that very addiction to a single study, have left the rest of their large faculties uncultivated and bare. Painful instances do occur of

* Adv. of Learning, p. 60.

persons preternaturally strong on one point, and lamentably weak on all others. They are popularly said to be too much philosophers to possess common sense. Too much learning has made them mad. But though it be too much in one sense, it is too little in another. The eye long fixed on one single object becomes nearly blind to every other; and in like manner it would be very easy to show that such a contracted range of thought must really influence the mind in the same manner that sudden knowledge does the superficial thinker. The man has accustomed himself to solve completely all the doubts which arise in his mind on the single subject of his contemplation, and to refuse even to entertain any other doubts or questions whatsoever. He may be an oracle to others, but he is almost a divinity to himself. He may promote knowledge in one direction, but it will go hard with him if he has not sacrificed his own true and highest interest.

Far other was the effect of knowledge upon the mind of Newton. "This I immediately discovered in him," says Dr. Pemberton, his contemporary and disciple, "which at once both surprised and charmed me. Neither his extreme great age nor his universal reputation

had rendered him stiff in opinion, or in any degree elated. Of this I have had almost daily experience.” “The modesty of Sir Isaac Newton,” adds his biographer, Sir David Brewster, “in reference to his great discoveries, was not founded on any indifference to the fame they conferred, or upon any erroneous judgment of their importance to science. His modesty arose from the depth and extent of his knowledge, which showed him how small a portion of Nature he had been able to examine, and how much remained to be explored in the same field in which he himself laboured.”*

Before drawing these considerations to a close, I would earnestly beg your attention whilst I endeavour to find an answer to this most important and practical inquiry. If “a little learning” be really dangerous; if knowledge be not an unmixed and certain good,—but if it be liable to abuse and misapplication, especially to the young, the inexperienced, and the ardent, and in one sense more so in proportion to the ardour and rapidity with which it is acquired,—how shall *we*, placed in the re-

* Life of Newton, p. 338.

sponsible situation of communicating a little of the limited knowledge which we ourselves possess, do so with safety and advantage to *you*, who come here for the purpose of obtaining it? “Drink deep, or taste not,” is the prescription of the Moral Poet. But how apply it in a case where so much is to be learnt and the time is so short? The question is not without anxiety. If I shall succeed in awaking your minds to a sense of its importance and concern, I shall have gone some way towards rendering the knowledge which I hope you are to acquire, both safe and profitable. Nevertheless, it is wise, though painful, to reflect that there are perhaps in every place of education those who had better never have come there,—unstable minds puffed up, not edified by instruction, who seek to reap the worldly and ostensible benefits of instruction without submitting to the discipline and self-denial through which alone it can be blest. In exposing the danger, we have gone far towards indicating the remedy; a few summary suggestions of a practical tendency are all that can find a place here.

I. Notwithstanding that any branch of academical study—natural philosophy, for instance—

is sufficiently extensive and difficult to occupy alone and fully the whole period commonly allotted to attendance on the faculty of arts, and notwithstanding the evident necessity that the knowledge acquired in the limited time devoted to each science, can afford but a cursory and incomplete insight into it, and so far may justly be called superficial, — yet, taking the course of study as a whole, and as a system of consecutive training, the exertions of even a moderately diligent student, extending over at least four years, may fairly be regarded as a considerable and also as a sustained effort. And the long summer vacation, whatever disadvantages may sometimes attend it, gives time, to those willing so to employ it, to arrange and digest the mass of general and particular knowledge acquired—often, I must say, with extraordinary perseverance and application—during our regular session. It is, then, a very great safeguard to the young, applying themselves for a limited time to an extensive science, that it is not a study standing out, apart from their general employments and habits of mind, but is an integral portion of a system of education engrossing much of their thoughts and time during

that important period of life when the acquisition of fresh knowledge is particularly congenial and easy. Fortunately, the same general mental discipline is at once the means and the reward of prosecuting intelligently the various paths of learning; and therefore, in a well regulated course of instruction, there are no very sudden transitions, or at least, if they appear so, they do not long continue to perplex a mind fortified by previous efforts of habitual attention and intelligent exertion. And in practice it is generally found that the able and successful student in one department, is able and successful, though not perhaps equally so, in all. His case is very different from that of a young man brought up to no such training, and inured to no such painful alternations of success and defeat, who, entering all at once upon the study of some popular branch of knowledge, finds himself unexpectedly master of a world of new terms, and some ideas which his less educated contemporaries do not possess; he becomes first bewildered and then vainglorious; he rejects all that requires painful effort, and adopts as his own all that can minister to his excited love of approbation. Of course, a little

learning is to him a really dangerous acquisition.

II. The next safeguard in the search after truth is obtained by accustoming the student early to look beyond the mere facts with which he becomes acquainted, to the laws and generalizations by which they are connected, and the appropriate ideas or theories by the assistance of which a body of science is constructed and united. In short, if he would reap the advantages of learning, he must be taught the inductive method of arriving at truth, so often and justly praised, not only as an instrument of discovery, but as a wholesome and advantageous discipline. And this consideration will very much direct the course of study. For if the communication of the largest number of facts applicable to practice, or the largest number of theorems and corollaries, whether in mental, mathematical, or physical learning, be really the great end of education, the course to be pursued will be widely different from that to be recommended if the cultivation of the mental powers, the habit of self-reliance, of accurate analysis, calm decision, and prompt application, be, as we conceive they are, the chief benefits to be kept in view. The student might indeed suc-

ceed, after hearing a condensed course of lectures,—on natural philosophy, for example,—in having his note-book stocked with a tolerably ample syllabus of the main facts of the inductive sciences, the names of the discoverers, and the enunciation of the laws which they brought to light,—and yet he may find himself helpless, to apply or extend his knowledge in any one department of the very sciences of which he has thus transferred to paper the lifeless and symbolic alphabet. Let it rather be his aim to fix well in his mind *first principles*, which are in general more irksome and laborious to comprehend and apply than details and ramifications of science, just in proportion as they are more valuable as guides, and more improving as studies.

If two methods of acquiring a piece of information or a useful rule be presented to you, always prefer that which reduces the rule to a principle previously known, and by the aid of which it may always be recalled. If you trust to an effort of memory, it may deceive you, and falsify the results.

The present caution extends to the rapidly extending practice of making formal and severe examinations the *sole* test of the student's pro-

ficiency. After the laxity which long prevailed in almost every university in ascertaining that lectures were in any degree comprehended as well as listened to, there seems a tendency, during the last few years, to push the examining system to an extreme, which, with very great advantages, has yet some drawbacks. It encourages a too exclusive cultivation of memory, and of superficial but showy dexterity in the mere enunciation of laws and solution of problems. It is also subject to the objection of occasionally pushing rivalry too far, and thus attaching an importance altogether adventitious to such kinds of expertness as I have now spoken of. Having always myself attached much weight to examinations as a principal means of ascertaining proficiency, and having been, I believe, the first to introduce the employment of printed examination papers into this university, I shall not be suspected of undervaluing so useful a practice. All that I contend for is, that an *exclusive* reference to the results of stated examinations is apt to produce exactly the evils which flow from the misdirection of learning, or from sudden and superficial knowledge. When study is divorced in any measure whatever from reflection, it degenerates

into what is vulgarly, but expressively, called *cramming*; an effort of memory, or at best a kind of mechanical expertness, which simulates real knowledge, often so effectually as to deceive not only by-standers, but the learner himself. This error is the more to be guarded against by us, that the exact sciences are peculiarly obnoxious to it.

III. One of the most effectual remedies against undue elation from superficial acquirements is, to use an effort frequently to recal how trivial is the amount of your acquirement, compared to that which is, or may become, known; and of that little, how infinitely small a fraction can in any just sense be called your own. And though the contrast between the small extent of human knowledge and the amount of our ignorance be greatest and most overwhelming in amount, yet the argument which applies to the whole human race is not so convincing as that which affects the individual. It is well, therefore, that the student, whilst he is guided in the acquisition of that kind of knowledge most likely to improve his powers of reflection and judgment, and most productive of the mature and valuable fruits of practice, should have his attention directed, at

least to the *existence* of numerous and flourishing branches of science, to explore which he dare not linger, under the penalty of missing the main objects of his study; yet each of which possesses a real and peculiar value, and each has, perhaps, formed the sole or main occupation of able and industrious men during the whole period of their natural lives. Frequent reference in a course of lectures to what we are obliged to leave unnoticed or unexplained, although it may be displeasing to our self-love, and may detract, in the eyes of some, from the value of what, in our instructions, we can effectually compass, has yet this good effect, that it tempers with becoming humility the elation of the ardent mind, ever ready to conclude, that each eminence surmounted must at length be the commanding summit which, as seen from a distance, was the goal of his exertions. Yet still

“Hills peep o’er hills, and Alps o’er Alps arise.”

A glance at the literary history of the past, or even at the titles of books, thousands upon thousands of which, each chronicling the best and proudest effort of an individual mind, have passed into nearly hopeless oblivion, may satisfy

any one how great is his debt to his predecessors, and how small is the addition which he has any chance of making to the common knowledge of mankind. What is present and personal to ourselves, assumes, by the very constitution of our nature, a disproportionate bulk and consequence. In estimating his own acquirements, as well as in the regulation of his conduct, the prudent man will look both behind and before; *behind*, to the lives and discoveries of those whom he aspires rather than hopes to imitate, and *forward* he carries himself in imagination to that no distant period when his present successes and elation, and the grounds of them, shall be altogether forgotten—when all the borrowed learning, stored with so much toil, and husbanded by such an effort of memory, shall, by an inevitable and just decree, be redissolved into its elements, then to be restored in unalienable and perpetual right of property to their original possessors, and all that posterity shall call *his*, will be the handful which patient thought has really made his own—the truths he has discovered, and the benefits wherewith he has endowed man's estate.

IV. Lastly, let us add, that one great safeguard from the evil effects of superficial and

suddenly acquired knowledge is to be found in the Christian character of domestic and public education. The cultivation of the *mere intellect*, be it much or little, is ever a questionable, and even a dangerous boon. The discipline and education of the moral sense, the exercises of habitual piety and the sanctions of revealed religion, are truly found, by dearly bought experience, to be necessary for the temperate and useful employment of the reasoning faculty. May it be our effort, and the united effort of those who direct the higher education of our country, to perpetuate a union in the exercise of all the powers with which we have been endowed, and for which we are responsible; between Virtue and Knowledge, Faith and Reason.

These considerations are carried to a higher pitch of solemnity, when we recollect that the treasures of the intellect—far nobler and more enduring, as they are, than the gold of the miser, yet, like even that poor hoard, can but be bequeathed, not carried with us beyond that grave in which there is “neither device nor knowledge.” The most serious and most convincing argument which I can address to an educated and Christian assembly of the young, against

the abuse of "a little learning," is to remind them that as attainments in knowledge are not *of themselves* small or great, good or evil, but become so in reference to the mind which receives them, to the temper in which they are acquired, and to the use to be made of them; that such knowledge is a talent committed to the care of each, not for miserly hoarding, nor to squander in vanity and ostentation, but as a capital to be improved by our own exertions, as the very appointed means of calling our faculties into activity, and of imparting like treasure to others on the same condition; the condition, namely, of *use and increase*, without which, when required to render it back to the great Creditor, we shall be condemned as selfish and unprofitable.

Let us close with Lord Bacon's "Student's Prayer:"—

"To God the Father, God the Word, and God the Spirit, we pour forth our most humble and hearty supplications, that he, remembering the calamities of mankind, and the pilgrimage of this our life in which we wear out our days, few and evil, would please to open to us new refreshments out of the fountains of his goodness for the alleviating of our miseries. This

also we humbly beg, that human things may not prejudice such as are divine; neither that, from the unlocking of the Gates of Sense, and the kindling of a greater natural light, anything of incredulity or intellectual night may arise in our minds towards Divine mysteries. But rather that by our mind, thoroughly cleansed and purged from fancy and vanities, and yet subject and perfectly given up to the Divine Oracles, there may be given unto faith the things that are faith's. Amen."

APPENDIX.

MR. MACAULAY'S SPEECH AT EDINBURGH.

MR. MACAULAY rose, and said, I have thought it right to steal a short time from duties not unimportant, for the purpose of lending my aid to an undertaking eminently calculated to raise the character and promote the best interests of the city which has so many claims on my gratitude. The Directors of this Institution have requested me to propose to you as a toast, "The Literature of Great Britain." They could not have assigned to me any part in these proceedings more perfectly in harmony with the views which I take of the nature and objects of this institution. It is, I conceive, an institution for the purpose of imparting knowledge, chiefly through the medium of our own language and of our own literature. Your city is already rich in libraries, worthy of her fame as a seat of learning, and as a seat of jurisprudence. A man of letters can have no difficulty here in finding access to repositories of learning, filled with the varied wisdom of many ages and of many countries. But something was still wanting. We still want a library readily accessible to that large, that important, that respectable class, which, though by no means destitute of literary curiosity—of sensibility to the highest powers of genius, is yet necessarily compelled, by the pressure of daily avocations, to confine their studies almost entirely to their own lan-

guage. For that class, I conceive, especially—I do not say exclusively—this library is intended, I hope that the directors of this institution will not be satisfied—I, as a member, certainly shall not be satisfied—till we possess a truly rich and complete collection of English literature—till it is impossible to seek in vain upon our shelves for any English book which is valuable either by reason of its substance, by reason of its style, or by reason of any light which it may throw upon civil, ecclesiastical, intellectual, or social history; a collection which shall contain every work in the English language that can afford either useful instruction or harmless amusement. From such a collection, open to all that valuable class of men, I expect great good; and when I say this, I do not take into account those rare and extraordinary cases to which my valued friend the Lord Provost has so happily and strikingly alluded. We must indeed remember that it is not impossible that some great genius, qualified to enrich literature by some durable work, or to extend the empire of mind over matter—may possibly for the first time feel a consciousness, in our library, of powers yet undeveloped—it is not impossible that in our rooms the first thought of something great may cross the mind of some Herschel, of some Watt, or of some Arkwright. But I speak not of these rare and peculiar cases. What I anticipate is, that throughout the whole of that valuable class whose benefit we have peculiarly in view, there will be a general intellectual, and by consequence, I hope and believe, a general moral improvement. The many hours which otherwise would have been passed in folly, perhaps in vice, will be employed in pleasures which not only are harmless, but have a positive tendency to elevate the character. My own experience and observation, formed in different parts of the world, and on various classes of men, lead me to hold this

opinion strongly. I have had occasion officially to form some notion what those causes are which affect the moral and intellectual character of regiments, and I will venture to say, that all experienced and judicious officers hold that the whole character of a body of young officers may be materially affected by the circumstance of their having the benefit of a valuable library. I was myself told so by a most accomplished man, an eminent soldier, and no mean diplomatist, who enjoyed the confidence of the first statesman which Europe has in modern times produced. When I asked to what he owed his accomplishments and success, he said, "When I served as a young man in India, just on the turning point of my life, when I had the chance of spending my life either in card-playing, in smoking howkahs, or in drinking toddy, I was quartered two years in the neighbourhood of an excellent library, which was at all times accessible to me, and to that circumstance I owe it."

Some objections urged against that species of mental cultivation which, I trust, this Institution will afford, have been so happily and satisfactorily disposed of by my friend the Lord Provost, and by my most Reverend Friend the Archbishop of Dublin, that it is utterly superfluous for me to advert to them. There is, indeed, a topic which is advanced—sometimes by men of eminence—against this, and against similar institutions, which I think I may, with your permission, notice. Their dread is of all superficial knowledge. They say that knowledge is, indeed, a great blessing to mankind; that it is closely connected with virtue; that it is an indispensable preparative for freedom; but then it must be profound. A reading public, they say, must have a little of mathematics, a little of astronomy, and of chemistry; they must read a little of poetry and of history; and this is dangerous to the State! Such a species of half knowledge is worse than ignorance.

They say, "Drink deep, or taste not—Shallow draughts intoxicate—Drink largely, and it will sober you"—repeating the well-known lines of the poet. I must confess that this danger never seemed to me to be very threatening, and that, for this reason chiefly, because I never could prevail on any of those persons who entertain such apprehensions to let me know what was their standard of profundity. The argument presupposes that there is some line between profound knowledge and superficial knowledge, similar to that between truth and falsehood. I know of no such line. When we say that a man is deep in science, we do not mean to say that he has got to the bottom of it, or near to the bottom. When we talk of deep and shallow, are we comparing human knowledge with the vast mass of truth which is capable of being known, and to which, probably, in the course of ages, human minds will actually attain? If that be the meaning, then we are all shallow together—and the greatest men that ever lived would be the first to confess their shallowness. If we could call up the greatest of human beings—if we could call up Sir Isaac Newton, and ask him whether, in those particular pursuits in which he attained the highest excellence, he considered himself as profound and knowing, upon comparison with the mass of that which is capable of being known, he would have told you that he was a smatterer like yourselves, and that the difference between him and you vanished when compared with the difference between his knowledge and the mass of science to be explored, just as the difference between a person standing on the level of the sea and one standing upon the top of Benlomond utterly vanishes when they make observations on the fixed stars.

But if this is not the standard, what constitutes the standard? Is it the same for years together? Is it

the same for generations together? Is it the same in two countries? Is it not notorious that the profundity of one country is the shallowness of another?—that the profundity of one generation is the shallowness of the next? What would we think of the profundity of the chemist of 1746? What would we now think of the profundity of the geologist of 1746? There is necessarily a natural progress in every experimental science, of such a nature that what occupied the first rank of one generation is placed in the hind rank of another. It is the same with countries. That same knowledge which entitled Rammohun Roy to be called the most profound among the Hindoos, would have made him but a superficial member of this Institution. That knowledge of geography which entitled Strabo to be called the prince of geographers, would now be considered mere shallowness on the part of a girl at a boarding-school. The truth is, that changes take place something like what Gulliver experienced. He was first shipwrecked on a country of little men, and immediately he was a colossus amongst them. He strides over the walls of their capital—he stands higher than the top of the temples—he strides his legs, and the royal army marches below them with drums beating and colours flying—he devours for breakfast a whole granary, eats a herd of cattle for dinner, and washes them down with the contents of a cellar. In a little while he finds himself in a country of giants; then, instead of taking the people in his hand, as he did at Lilliput, he is himself taken up in the hands of his masters—and it is all that he can do, with the help of his ladder, to defend himself from the rats and the mice. The monkey runs off with him to the chimney-tops, and the dwarf drops him in the cream-jug, and leaves him to swim for his life. Now, whether is Gulliver a tall or a short man? The truth is, that in

his own house he would have been considered neither the one nor the other ; but take him to Lilliput and he is the man-mountain, and among the Brobdignagians he is a little man. In the same manner, the intellectual giants of one age become the intellectual pigmies of the next ; and if all those effects flowed from shallow knowledge which have been stated, then it must have been the greatest of all evils that in the thirteenth century there should have been such a thing as a profoundly learned man. It strikes me that you might, without much difficulty, make a parallel between the most profoundly learned man of the thirteenth century and one of those whom we hope will pass their evenings in our library, and which may lead us to change the names of profundity and shallowness. Let us draw the parallel in one or two points. Take your great and learned man of 600 years ago, of the time of Henry the Third, or of Alexander the Third of Scotland—some man who would be considered as the first in intellect, the first in science, and the first in literature, of the whole island ; and let us see what his attainments amount to. Let us take the two sciences which were studied most in the middle ages. Let us take the sciences of astronomy and of chemistry. Take the astronomer. He is a firm believer in the Ptolemean system—a man who never heard of the law of gravitation. Tell him that the succession of night and day arises from the revolution of the earth on its axis. Tell him that in consequence of this revolution the polar diameter of the earth is shorter than the equatorial ; and if he does not set you down as an idiot, the probability is, that he hands you over to the Bishop, that you may be burned as a heretic. But if he be not perfectly well informed on these points, there are parts of his science in which he has made great proficiency. He can cast a nativity for you. He knows at what moment Saturn is in the house of life, and what

events follow from Mars being in conjunction with the Dragon's tail. He can tell you which of your children will be fortunate in marriage, and which of them will be lost at sea. Now, take this very profound man—I speak not of him in contempt—he was a great man in his age—and compare with him one of what are called your own shallow members, whose exceedingly superfluous knowledge is said to be dangerous to intellectual character. I doubt not that a copy of Sir John Herschel's beautiful work on astronomy will be found in your institute. A very few evenings spent over the perusal of that volume will not, it is true, enable him to cast the nativities of your children, but it will, I believe, give him a far more correct and more profound notion of the solar system, and of the laws which govern the heavenly bodies, than the greatest astronomer of the thirteenth century possessed. Or take the science of chemistry. Our great man—for we will suppose him to be a universal genius—our great man of the thirteenth century is a great chemist. He, perhaps, has got as far as the very pillars of the Hercules of his chemistry—for such it was regarded in that day—he has perhaps got as far as to know that if you mix charcoal and saltpetre together in certain proportions, and apply fire to them, there will be a great explosion. But of the possibility of employing this knowledge to make a revolution in the art of war, or to accomplish vast scientific results, he has no conception. But there was a thing in which he goes beyond the reach of modern chemists. He was in full chase of the philosopher's stone; and he has an array of saltpetre, and of red oil and white oil, burning night and morning, and he entertains the firm conviction, that by means of these stews he will some morning turn all his pots and pans into gold. I can hardly hope it may be the case, but it would afford great pleasure to a large portion of the citizens of Edinburgh

if Professor Faraday could come here and deliver such lectures as I heard him deliver to the little children at the London Institution during the Christmas holidays. I cannot promise you that he could teach you how to turn your halfpennies into sovereigns, but I believe you would carry away a more accurate and profound knowledge of chemistry than you could have derived from all the learned men of the thirteenth century.

As to the literature of that time, I can say with perfect confidence, that his opportunities of enlarging his mind, and his means of literary enjoyment, are not to be compared with those who possess in our day only the standard productions of English literature. I would add one word more. One of the great advantages which the English language possesses to those who are ignorant of other languages is this, that to a great extent they are able to enjoy, in an imperfect manner indeed, but still to enjoy the great productions of the minds of other ages. We have great variety of translations. It is scarcely possible that any translation can completely attain the excellence of the original, but it is not less true that the great features of every great work, the conception of the character, the general outline of a very large portion, may be preserved. Such a work will give the English reader a notion of the great compositions of other times and of other nations. I may be permitted to felicitate my countrymen who have not been so fortunate as to command leisure, on this circumstance, that through the means of the English language we may obtain admittance to intellectual wealth more precious than the scholars in the days of Charles the Fifth could obtain—more precious than could be obtained by Erasmus or Melancthon. And this brings me back to the point whence I started. The toast which I have been requested to propose is, “True

British Literature,"—that literature, the brightest, the purest, the most durable, of all the glories of our country—to that literature rich in the treasures of truth and fiction—that literature which boasts of the prince of all poets, and the prince of all philosophers—to that literature which has exercised on mankind a mightier influence even than that of our commerce or of our arms—to that literature which has taught France the models of liberty, and has furnished Germany with the models of art—to that literature which constitutes a tie even nearer than blood, between us and the commonwealths in the great valley of the Mississippi—to that literature before the light of which impious and cruel superstitions are fast taking flight on the banks of the Ganges—to that literature which will in future ages instruct and delight unborn millions, which will then have covered with cities and gardens the Australian and African deserts—"To the Literature of Great Britain;" and wherever the British literature spreads, may it be attended by British virtue and by British freedom.—*Edinburgh Paper.*

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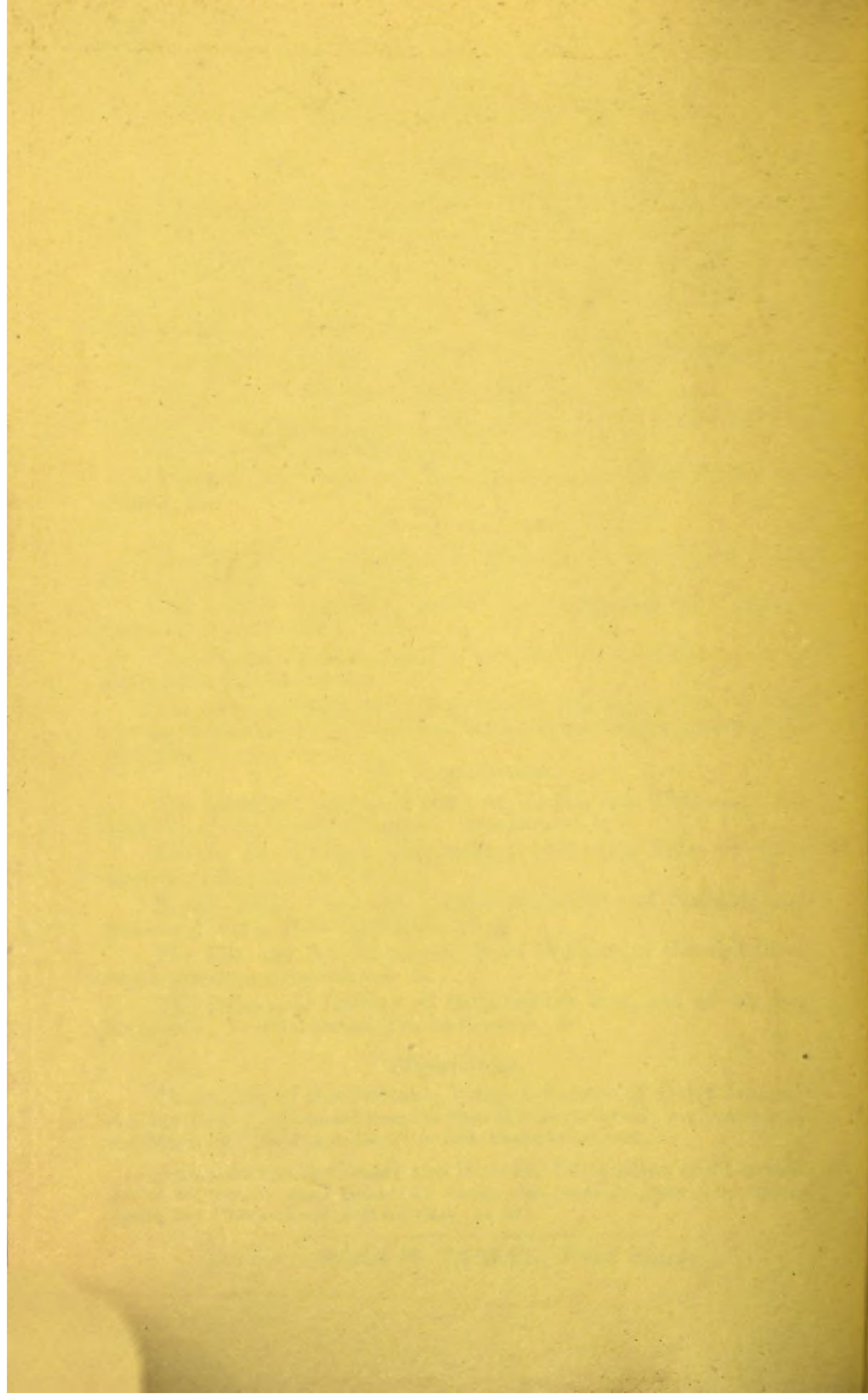
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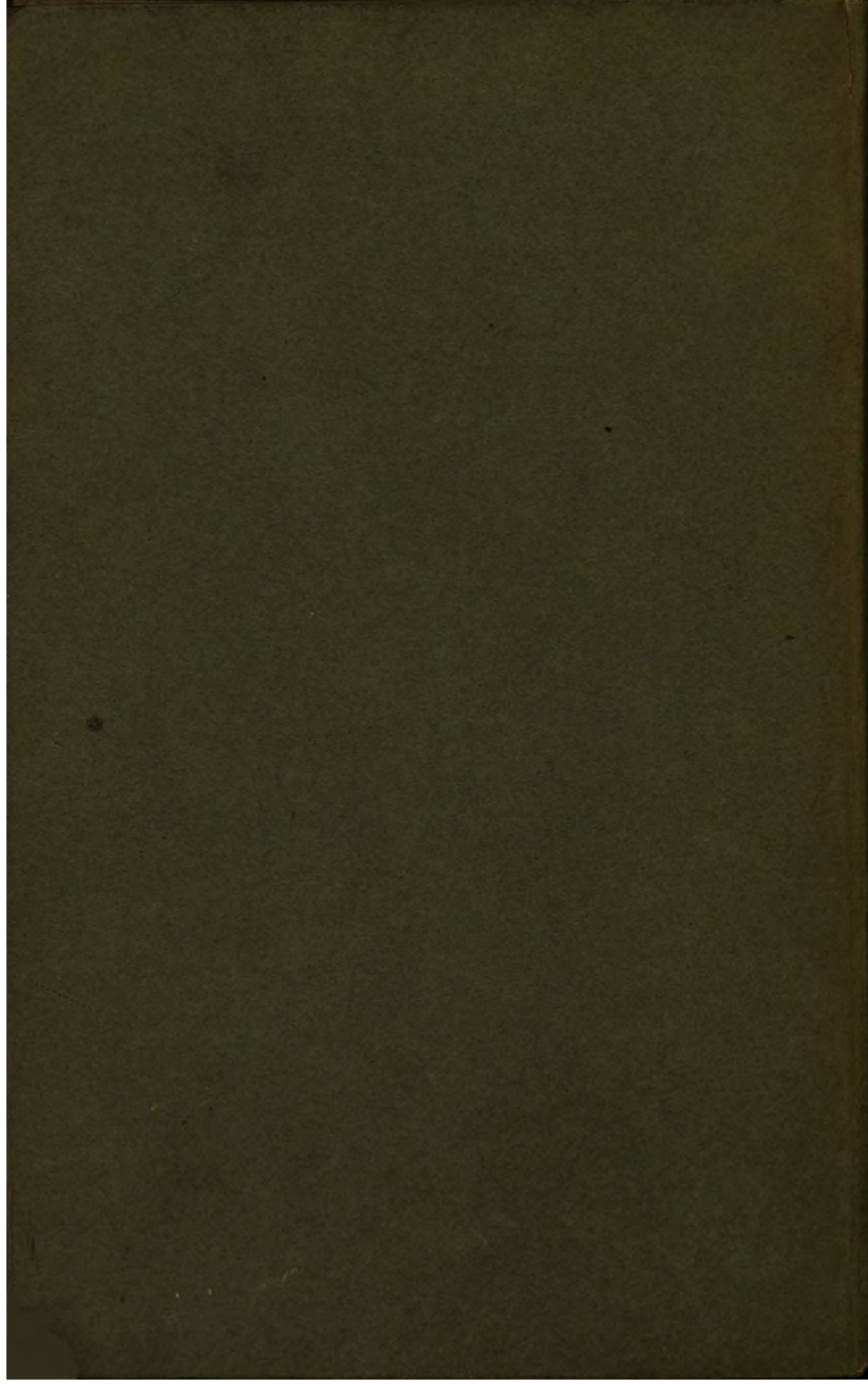
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